

INTRODUCTION



This chapter describes education and public awareness efforts by various local, state, federal and private organizations.

The Clean Water Act was passed in 1972 and reauthorized in 1987. The Nonpoint Source Program was created as part of that reauthorization. Environmental laws passed since 1972 have served to greatly reduce the pollution from industry and municipalities, but nonpoint source pollution (nps), created by all of us from farmers to homeowners, remains a problem. Education has always been an important part of the TDA-NPS Program, since it is non-regulatory.

EXTENT OF PROBLEM

Although nonpoint source pollution is the most prevalent type of water pollution, there is much confusion about what nonpoint source pollution is. Many people incorrectly blame nonpoint source water pollution on industry or are not familiar with the words, “nonpoint source pollution”. There is a great need for public education on water quality issues, particularly nonpoint source pollution. The challenge is to become aware of the different education programs across the state and to share information with other agencies so that all persons involved can work together to raise public awareness of water quality and nonpoint source pollution.

SOLUTIONS

Most agencies that are involved with water quality protection have some type of educational component. Different agencies and organizations coordinate education efforts to some extent. Coordination will be increased through meetings of the Education Working Group. Education efforts include publications such as pamphlets, booklets, posters, manuals and videos; information on Internet sites and CD ROMs; public awareness events such as water festivals or Earth Days; presentations; media coverage from TV, radio and newspapers. Other projects include demonstration projects where participants are invited to view BMPs and learn about water quality protection, and workshops and training seminars.

Publications are distributed at events such as Earth Day or environmental fairs, or are sent out on request. New publications that are targeted to a specific group (such as BMP manuals for developers or farmers) are usually distributed throughout the state to regional offices (such as NRCS offices). Often, an initial distribution generates requests for additional publications.

Demonstration projects are advertised through the media and mail-outs to target audiences and are usually organized as a joint effort between agencies. Participants are invited to a specific farm or area where BMPs have been implemented or installed and are provided information about them. Projects may focus on a specific problem such as forestry BMPs or they may cover nonpoint source pollution in general. Some projects

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focus on elementary or high school students, others are for adults. Projects may be targeted for a specific audience such as farmers, landowners, or foresters. The following is a list of our partners and description of projects.

Most of the NPS Program's outreach projects are targeted to adults. Project WETT is offered to teachers and facilitators who in turn teach students. The NPS Program has developed an instream education manual in an effort to standardize activities across the state. The target audience for this manual is also teachers and facilitators, as are the Ag in the Classroom projects. Specific projects such as Project WETT or Ag in the Classroom are administered by the project managers, representatives from an agency or agencies responsible for managing the program. Publications may be designed for a specific audience (such as farmers or foresters) or may be aimed at the general public.

COOPERATING PARTNERS**Partners**

Austin Peay State University
 Boone Watershed Partnership
 Cumberland River Compact
 Environmental Protection Agency
 Great Smoky Mountains Institute at Tremont
 Ijams Nature Center
 Izaak Walton League
 Metropolitan Areas (Chattanooga, Knoxville Memphis, Nashville)
 Mid-South Fly Fishers
 Motlow State Community College
 Tennessee Aquarium
 Tennessee Conservation League
 Tennessee Department of Agriculture
 Agricultural Resources Conservation Fund
 Division of Forestry
 Tennessee Department of Education
 Tennessee Department of Environment and Conservation
 Division of Water Pollution Control
 Division of Community Assistance
 Tennessee Environmental Education Association
 Tennessee Farm Bureau
 Tennessee Higher Education Council
 Tennessee Resource Conservation and Development Councils
 Tennessee State University
 Tennessee Technological University
 Tennessee Valley Authority
 Tennessee Wildlife Resources Agency
 The Nature Conservancy
 University of Memphis
 University of Tennessee Institute of Agriculture
 University of Tennessee Water Resources Research Center
 USDA Natural Resources Conservation Service
 US Geological Survey

Abbreviation

APSU
 BWP
 CRC
 EPA
 GSGIT
 INC
 IWL

 MSFF
 MSCC
 TN-AQ
 TCL
 TDA
 -ARCF
 Forestry
 TDE
 TDEC
 -WPC
 -DCA
 TEEA
 TFB
 THEC
 TNRC&D
 TSU
 TTU
 TVA
 TWRA
 TNC
 UM
 UTIA
 UTWRRC
 NRCS
 USGS



Williamson County Schools

WCS

Austin Peay State University (APSU)

The NPS Program has been working with APSU's Center for Excellence in Field Biology for several years. Through contracts with the NPS Program, APSU has worked with the local NRCS in holding field days to demonstrate BMPs and has held educational workshops on riparian restoration and water quality monitoring with juvenile mussels. APSU contracted with the NPS Program to coordinate the Water Education for Tennessee Teachers (WETT) Program, which is the State's chapter of the national organization, WET. WETT teaches water quality education through workshops and free materials for facilitators and teachers, helping to incorporate water quality education into the school curriculum.

Boone Watershed Partnership (BWP)

BWP has an Adopt a Watershed program at several high schools in the area where students monitor the water quality and learn about causes of water pollution and how to prevent it.

Cumberland River Compact (CRC)

CRC is a citizen's group that promotes stewardship of the Cumberland River by publishing articles, publications and holding events such as the Splash Bash. Among their projects is a publication that reinterprets the 303 (d) list, making it more user friendly. It also maintains a Water Quality Advisory Committee to provide technical expertise. Members of this group are from TDEC-WPC, TDA-NPS Program, USCOE, TWRA and Metropolitan Nashville/Davidson County Water Department. The CRC used USCOE maps and TDEC-WPC data to determine what areas of the river are being impaired and presented this information at public meetings.

Environmental Protection Agency (EPA)

The EPA is the primary federal water quality agency, providing funding for the NPS Program and setting its guidelines. Education is an important component of the EPA. The agency sponsors several workshops and conferences and publishes many educational tools for all age groups.

Great Smoky Mountains Institute at Tremont (GSMIT)

GSMIT is an environmental school, which features several courses a year. This includes classes for adults as well as for children. Programs focus on everything from wildlife to environmental ethics. All Tremont programs are operated by the Great Smoky Mountains Natural History Association in cooperation with the Great Smoky Mountains National Park.

Ijams Nature Center (INC)

Ijams Nature Center is a nonprofit environmental education and resource center located on 80 acres on the banks of the Tennessee River in Knoxville. Among their programs are the River Rescue, an annual volunteer river clean-up effort and Storm Drain Stenciling projects. The center offers workshops such as Project WILD for teachers as well as workshops for children ages two to eighteen.

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Izaak Walton League (IWL)

The IWL was founded in 1922 as an organization of conservation-minded outdoor enthusiasts who work through voluntary community-based action and education programs. Save Our Streams (SOS) is one of the programs sponsored by the IWL. SOS is a grassroots river conservation program that works through volunteers who monitor water quality in streams and provide education programs. The Tennessee chapter of IWL will be able to provide input through the EWG as IWL has an extensive list of environmental publications.

Metropolitan areas, (Chattanooga)

The City of Chattanooga has an educational program for children that uses the character, C.C. Otter, to teach water quality issues. They have published a manual and pamphlets about storm water BMPs, and have received State and national recognition and awards for their program.

Mid-South Fly Fishers (MSFF)

MSFF is a group of fly fishers based out of Memphis, Tennessee, that recognizes that the future of fly fishing depends on clean water. They are the sponsors of Water Education Teams (WET), a water education program that involves high school students in water quality monitoring. In addition, MSFF has established the Mid-South Fly Fishers Scholarship Foundation, which is committed to provide scholarships of \$1,000 per year for four years to senior students who have participated in WET and intend to pursue a career in ecology or science.

Motlow State Community College (MSCC)

Dr. Linda Harris-Young, with MSCC, developed a database of community colleges across Tennessee who are participating in, or interested in in-stream education. This database will assist the NPS Program in coordinating a statewide in-stream education effort. The EWG can use this as tool for networking ISE information, as well as for other nonpoint source issues.

Resource Conservation and Development Councils (TNRC&Ds)

The RC&Ds are funded by the U.S. Department of Agriculture and work to promote economic growth and conservation efforts on a local level. All of the seven RC&Ds in Tennessee address natural resources conservation and most are or have been under contract with the TDA-NPS Program. The RC&Ds sponsor the Tennessee Envirothon, an environmental competition for high school students. The Envirothon is partially funded by 319 (h) funds. Regional competitions are held first in each of the RC&D council areas, then a state and national competition are held. The RC&Ds also sponsor other workshops, such as Conservation Camp (for fifth graders). In addition, the RC&Ds establish projects to implement BMPs such as riparian zone restoration.

Tennessee Aquarium (TN-AQ)

The Tennessee Aquarium offers environmental education (including water quality) opportunities to students and teachers through onsite classes, outreach programs and Internet video conferences. Local teachers have access to water quality related videos and CD-ROMs through the Environmental Learning Lab.



Tennessee Conservation League (TCL)

TCL has been an active partner with the TDA-NPS Program and through a contract, produced pamphlets, posters, brochures and a video. The TCL is still involved with environmental education and has co-sponsored Project WILD, Aquatic Wild and PLT as well as other workshops. They produce a newsletter and hold an annual meeting where awards are given to environmentally conscious individuals and businesses.

Tennessee Department of Agriculture Ag. Resources Conservation Fund (TDA-ARC)

TDA-ARC provides another source of funding for implementing nonpoint source BMPs. The Regional Administrators with this program are environmental specialists in different areas of the state who work with the Soil Conservation Districts to give technical assistance to farmers and landowners. TDA-ARC allocates up to 5 % of its total funding per year for information/education projects with the target audience being landowners, producers and managers. TDA-ARC funds agricultural and forestry BMPs.

Tennessee Department Agriculture-Forestry Division (TDA-Forestry)

TDA-Forestry has a very extensive education program and has been working with the TDA-NPS Program since 1990. The TDA-NPS Program has funded this program through 319 funds and plans to continue this funding. The Master Logger Program is a workshop set up through the TDA-Forestry to train foresters and loggers in forestry BMPs. Each year several workshops are held across the state, both Master Logger workshops and other training workshops. In addition to training forestry and lumber industry personnel, TDA-Forestry also held a BMP training course for TWRA personnel. Portions of two forests, Chuck Swan and Natchez Trace, have been set aside for demonstration of BMPs. A BMP study was also done in Pickett State Park. Additional demonstration sites are planned through FY-2001. These sites will be funded through 319 (h) funding. TDA-Forestry also provides technical assistance to loggers and foresters and have produced several publications including pamphlets, brochures, booklets, handbooks and videos.

Tennessee Department of Education-Office of Conservation Education (TDE-OCE)

TDE has co-sponsored environmental education programs such as Project WILD, Project Aquatic WILD and Project Learning Tree (along with TDA-Forestry) in the past and was formerly an active partner with the TDA-NPS Program. Project WILD workshops are offered to teachers to provide curriculum materials about wildlife, Aquatic WILD focuses on water quality and aquatic wildlife, and Project Learning Tree teaches forestry concepts. It would be advantageous for TDE-OCE to be a part of the Education Working Group and serve to review curricula appropriateness in materials developed by other agencies.

Tennessee Department of Environment and Conservation Division of Water Pollution Control (TDEC-WPC)

The TDA-NPS Program works closely with TDEC-WPC. WPC's Watershed Approach includes public meetings in each of the watersheds. At the public meetings, citizens are given the opportunity to provide input about the watersheds in their area. As the State's lead water quality organization, TDEC may help sponsor educational water quality programs. WPC takes part in TDEC's department-wide events such as environmental fairs and publishes articles, pamphlets and other publications about water pollution



control. A primary publication is the 303 (d) list of impacted waters which is available to the public.

Tenn. Dept. of Environment and Conservation Division of Community Assistance (TDEC-DCA)

The TDEC sponsors a Pollution Prevention fair annually and the DCA plays a large part in this effort. They have also created publications such as pamphlets to inform the public about pollution prevention.

Tennessee Environmental Education Association (TEEA)

TEEA is a non-profit organization dedicated to promoting environmental education in Tennessee. They do this by sharing educational information; promoting research, development and evaluation of environmental programs, materials and activities; raising public awareness of the natural environment through interpretive programs and encouraging public understanding and support of environmental education programs and activities. Their newsletter addresses water quality issues. They work with public schools to include environmental education in the curriculum and lend support to and seek cooperation from institutions, organizations and agencies in matters pertaining to environmental education.

Tennessee Farm Bureau (TFB)

The Farm Bureau created the Ag in the Classroom (AITC) program (partially funded by 319(h) funds), which teaches elementary students about agriculture and includes information about agricultural BMPs. The educational materials were created by Farm Bureau and their partners. Workshops are held for teachers and educators once a year at universities, and locally at any time. The participants of the AITC programs are required to hold workshops after they have been trained, so the number of trained facilitators grows exponentially. In an average year, ten workshops were held at universities and eight were held locally, with almost 700 facilitators being trained. In addition to AITC, the TFB also offers farm tours and Farm Days through November each year.

Tennessee State University (TSU)

TSU holds Earth Days annually in conjunction with Spring Fling. In the past, the TDA-NPS Program has participated by setting up its educational display and distributing educational materials.

Tennessee Technological University-The Water Center (TTU)

The TDA-NPS Program contracted with TTU in the Cane Creek Lake and Park Stabilization Education Project. The project included demonstration of different cover types on critical areas around the lake and signage to inform the public about the details of the project and the importance of water quality protection. In a related project urban runoff is addressed by constructing a BMP on a parking lot to remove petroleum hydrocarbons. Another project demonstrates constructed wetlands as a means to remove pesticides and nutrients from runoff from container nurseries. A pamphlet delineating construction, operation, maintenance, and costs of constructed wetlands is included in this educational project.



Tennessee Valley Authority (TVA)

TVA has had a very well developed environmental education program. Their Watershed Resource Teams worked with landowners, local communities and businesses, interest groups, and public officials to find ways to protect water quality without limiting the rivers' use. In 1994, TVA launched the Clean Water Initiative to help make the Tennessee River System the cleanest and most productive. Since then, decreased funding has resulted in the land programs and water programs being combined into the Resource Stewardship program, which is separated into watershed teams. They do not have an active education program as in the past, however, they developed the original manual that the TDA-NPS Program is using for its Instream Education Program.

Tennessee Wildlife Resources Agency (TWRA)

TWRA has a Water Quality Education section that has been very active years. The NPS Program funded a contract with TWRA in 1992 to hold nonpoint source education workshops in every selected watershed, plus the Nashville area. These workshops were attended by teachers and educators. As part of the workshops, attendees visited BMP demonstration sites and took part in water quality monitoring. Participating in hands-on activities gave participants a richer experience that they were then able to take back to the classroom to their students. TWRA also has their own publications, which make mention of pollution prevention and water quality, including a video, *Water Quality: Every Fisherman's Concern*. As mentioned earlier, TWRA personnel attended Forestry Water Quality BMP training. TWRA has also been involved in several riparian restoration efforts. Free Fishing Day is an annual event when fishing is allowed without a license and public education activities are included, along with an educational display.

The Nature Conservancy (TNC)

TNC's goal is the long-term survival of all viable native species and community types through the design and conservation of protection sites within ecoregions. They promote water quality education by buying and protecting pieces of land. Assessing biodiversity and publishing the results of the studies are important components of their program.

University of Tennessee Agricultural Extension Service (UTAES)

UTAES is a division of the UT Institute of Agriculture. UTAES brings research-based information on agriculture, community resource development and home economics to Tennesseans. There are specialists in all 95 counties to provide technical assistance, and UTAES has published a variety of publications on educational information. UTAES contracted with the TDA-NPS Program to produce the Farm-A-Syst and Home-A-Syst programs, including videos, an agricultural and forestry BMP manual for Tennessee, and a CD-ROM and Internet site.

University of Tennessee-Water Resources Research Center (UTWRRC)

UTWRRC has two active contracts with the NPS Program, the Second Creek Stream Restoration Project and the Stormwater Management BMPs manual. The Second Creek Project involves restoring the riparian zone to areas that were in need of restoration. The Stormwater Management manual provides detailed information about BMPs to manage storm water. UTWRRC also teamed up with the Knoxville Water Quality Forum to create an Adopt-A-Watershed program in which several schools participated.



USDA Natural Resources Conservation Service (NRCS)

The NRCS has long been active in environmental education and was instrumental, along with EPA, in forming the Clean Water Action Plan in 1998. They have published many publications dealing with water quality and BMPs, such as “Backyard Conservation”, a booklet which addresses water quality concerns of homeowners and BMPs to address nps pollution associated with urban runoff and gardening. They have educational programs for children with characters such as Sammy Soil and Ruby Raindrop to help teach the importance of soil conservation and erosion control. The NRCS has many programs, which provide technical and financial assistance to farmers and landowners. These programs encourage the implementation of BMPs such as conservation buffers along streams. In addition, the NRCS sponsors the RC&D councils.

U.S. Geological Survey (USGS)

Water quality is an important concern of the USGS, which monitors water quality and stream flow data in several stations throughout the nation. The Water Resources Education Initiative (WREI) is an educational outreach program designed to promote interest in fresh water resources for students and educators in grades K-12. It makes use of educational materials and activities to teach students about water, how man's activities affect it, and how to make informed decisions in their own communities. The educational posters were developed and distributed by the USGS and WREI partners which include the EPA, the American Water Resources Association, the Groundwater Foundation, the U.S. Fish and Wildlife Service, and the U.S. Army Corps of Engineers. In addition, the USGS has published many environmental fact sheets and has an interactive web site with a section on water.

Williamson County Schools–Special Education Program (WCS)

The WSC System has an extremely active water education program. The NPS Program has contracted with it to form the Students in Tennessee Assessing Rivers (STAR) Project, which is part of the larger Harpeth River Environmental Education Project (HREEP). HREEP began as a local extension of the Global Rivers Environmental Education Network (GREEN), a national educational organization. STAR incorporates water quality education into all subject areas from math and natural science to computer science to the creative arts. It includes getting the students involved in hands-on activities such as water monitoring and writing their own newsletter and giving presentations at conferences. STAR and HREEP have won state and national awards for their considerable efforts in environmental education.

OTHER FUNDING SOURCES

Tennessee Higher Education Commission

The THEC has funded the Tennessee Aquarium with various grants to enable them to work with teachers in improving water quality.

Federal Sources

Many sources of additional funding are listed at www.aspe.os.dhhs.gov/cfda
The EWG will provide a listing to potential partners.



Additional funding sources for environmental projects are listed in the Catalog of Federal Funding, which can be found at: www.aspe.os.dhhs.gov/cfda

AREAS FOR PROGRAM EXPANSION

Media Coverage

Surveys done by other states indicate that media coverage has helped to greatly increase public awareness of water quality issues. The most effective media were newspapers, followed by television. Increasing media coverage at field days, demonstrations, workshops, and other events should help increase public awareness of nps issues. In addition, information will be covered by our web site, magazine articles and publications.

Urban Runoff & Construction

Urban runoff has been receiving more publicity and more funding for projects during the last few years and this trend needs to continue. There have been many education/information efforts focused on other types of nps pollution such as agriculture and forestry. However, with the growing conversion of rural land to urban, this type of runoff is widespread. Also, environmental education programs seem to be lacking in many metropolitan areas.

Another issue is “green growth”. This is a development trend to that incorporates best management practices at the building stage. These BMPs include limiting impervious surfaces and providing means of retaining runoff. The NPS Program is working on a manual for construction/urban runoff BMPs such as these.

Land Disposal

Land disposal includes landfills, failing septic tanks, illegal dumps and applied biosolids. This issue has not been addressed as much as other sources of nps. Information/education components should be included in land disposal programs.

MEASURES OF SUCCESS

- The Education Working Group meets twice a year to discuss and determine the strengths and weaknesses of the statewide educational efforts.
- Education issues are discussed in a breakout session at the annual Partnership Conference.
- Additional sources of funding are earmarked for various types of educational projects .
- Awareness among citizens is increasing, as measured through surveys.



MILESTONES

Long Term Goal 1.

Hold regularly scheduled meetings with stakeholders, to create new partners, to strengthen existing partnerships, and to foster greater trust, commitment and accountability.

- **Action 1:** The Education Working Group (EWG) will meet semi-annually.
Lead: TDA-NPS Program
Key partners: TDA-ARC; TDA-Forestry; UT-WRRC; APSU; TNRC&D; MSFF; TVA; WCS; TDEC-WPC; MTSU; TWRA; UTIA; TFB; TCL; Citizens
Year(s): 2001-2005
- **Action 2:** Increase EWG membership by one member each year.
Lead: TDA-NPS Program
Key partners: EWG
Year(s): 2001-2005
- **Action 3:** Establish the EWG mission statement, a list of collective capabilities, and priorities for funding.
Lead Agencies: EWG and TDA-NPS Program
Year(s): 2001-2005
- **Action 4:** Annually review, as necessary, the programs of federal agency partners for consistency with 319 priorities.
Lead: TDA-NPS Program
Key Partners: All federal agency partners
Year(s): 2001-2005

Long Term Goal 2.

Fully implement all developed TMDLs for nonpoint sources in compliance with existing regulations, policies, or agreements by 2015.

This goal does not apply to this chapter.

Long Term Goal 3.

Restore all waters impaired by nonpoint sources that are listed on the 1998 303(d) List to the condition of fully supporting their designated uses by 2015, in cooperation with local, state and federal partners.

This goal does not apply to this chapter.

Long Term Goal 4.

Beginning in 2006, through regulatory and non-regulatory means, prevent previously unlisted waters from being included on the 303(d) List because of nonpoint source impairments.

This goal does not apply to this chapter.



Long Term Goal 5.

Improve the knowledge of stakeholders and citizens concerning the origins, magnitude, and prevention of nonpoint source pollution, and how to prevent it.

- **Action 1:** Continue to sponsor the Tennessee Nonpoint Source Partnership Conference annually.
Lead: TDA-NPS Program
Key partners: TDA-Forestry; TDEC-WPC; UT-WWRC; TNRC&D; TCL; UTIA; TNC; USDA-NRCS
Year(s): 2001-2005
- **Action 2:** Attend, at a minimum, five events annually, such as Earth Day activities, water festivals, No-Till Field Day to disseminate information to the public through educational displays, publications and direct communication.
Lead: TDA-NPS Program
Year(s): 2001-2005
- **Action 3:** Create and distribute two new publications annually, such as educational pamphlets, posters, manuals, videos, CD ROMs.
Lead: TDA-NPS Program
Key Partners: EWG
Year(s): 2001
- **Action 4:** Expand TDA-NPS Program web page and update continually, as needed. Include links to all working group member agencies.
Lead: TDA-NPS Program
Key Partners: EWG
Year(s): 2001-2005
- **Action 5:** Provide at least three press releases to the media concerning the TDA-NPS Program activities annually.
Lead: TDA-NPS Program
Year(s): 2001-2005
- **Action 6:** Conduct at least one Ag In the Classroom workshop annually.
Lead: TFB
Year(s): 2001-2005
- **Action 7:** Develop three additional outdoor classrooms annually.
Lead: MTSU, TDA-NPS Program
Key partners: public and private schools
Year(s): 2001-2005
- **Action 8:** Sponsor nine regional and one state Envirothon annually.
Lead: TDA-NPS Program, TN-RC&Ds
Year(s): 2001-2005

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- **Action 9:** Begin one new in-stream education activity each year.
Lead: TDA-NPS Program
Key Partners: APSU, MSFF, IWL, high schools and universities; conservation groups; TN-AQ
Year(s): 2001-2005
- **Action 10:** Make the Instream Education manual available to citizens statewide.
Lead: TDA-NPS Program
Year(s): 2001
- **Action 11:** Expand the adopt-a-watershed program for student groups by one watershed annually.
Lead: TN-AQ; TDA-NPS Program
Year(s): 2001-2005
- **Action 12:** Fund, at a minimum five nonpoint source pollution demonstration projects annually.
Lead: TDA-NPS Program
Year(s): 2001-2005
- **Action 13:** Develop Memoranda of Agreement with key federal agencies to improve programmatic consistency.
Lead: TDA-NPS Program
Key Partners: All federal agency partners
Year(s): 2001-2005

Long Term Goal 6.

Through the process of continuous improvement, routinely assess all programmatic functions of the TDA-NPS Program in order to maximize efficiency, decrease the bureaucratic burden and increase the numbers of participants in the program.

- **Action 1:** Request feedback from partners annually to assess the quality of the TDA-NPS Program
Lead: TDA-NPS Program
Key Partners: EWG
Year(s): 2001-2005

Long Term Goal 7

Use the maximum allowable percentage of funding annually to assist partners with water quality monitoring and assessment, for the duration of the 319 program.

See chapter 1.9 for action items related to water quality monitoring and assessment.